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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,580	11/30/2001	Yuji Kawano	Q66805	3790

7590

05/23/2003

SUGHRUE, MION, ZINN, MACPEAK & SEAS
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EXAMINER

EASTHOM, KARL D

ART UNIT

PAPER NUMBER

2832

DATE MAILED: 05/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/996,580

Applicant(s)
Kawano et al.

Examiner
Karl Easthom

Art Unit
2832



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 16, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(a). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ | 6) <input type="checkbox"/> Other: |

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al.

(IEEE article submitted by app.) or Kano, in view of McGlone or Dahlberg et al. Wang discloses the claimed invention, except the vehicle-mount, at the INTRO section and at Fig. 4 where annealing at 300 degrees C occurs, meeting the storage requirement since ambient is not higher than same. The thickness is met since the bilayer thickness of CoFe/Cu is 37.9A, see Eq. 1, and with CoFe at 11-25 A at Fig. 4, t_m and t_n are met, where t_n is 37.9A-15 A, for example, or 22 A. The layers are disclosed as cobalt rich at the top of the col. 2, page 1, for the purpose of better magnetic properties and stability, which meets or suggests applicant's claim (when $1-x-y = 0$, leaving a cobalt rich $\text{Co}(x \text{ more than } .7)\text{Fe}(\text{less than } .3)$). That is, it would have been obvious to form a cobalt rich layer in the claimed range for the stated purpose of Wang. The element $z=1$ in this example. For claim 2, $N=21$ at p. 3521. For claim 3, the buffer layers of Ta, and layers at 40 A meet the claim, see Fig. 3. For claims 4-5, the heating at 300 C meets the claim for storage in normal ambients. Moreover, the storage temperature is akin to a field of use, so that the device of Wang could be stored at any such temperature, or guaranteed to be stored at same. Similarly, Kano discloses the claimed invention, except the vehicle-mount, at Fig. 9, and at col. 4, lines 20-45, with annealing at 320 degrees C at Example 2, col. 7, meeting the storage requirement since ambient is not higher than same. The range at col. 4, overlaps

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with applicant's claimed range, suggesting or meeting the ranges where the ranges are not unduly broad. Further, the device is prevented from heat deterioration during use, according to col. 15, lines 15-35, where the device can be operated at any temperature below 320 depending on the use. Or alternatively as to the storage temperature, McGlone discloses storing or using at from 80 degrees to about 250 degrees C, at col. 5, lines 1-10. McGlone discloses using the GMR sensor in a vehicle or many types of applications, including GMR devices having Cu and Co, similar to that of Wang, see col. 9, lines 55-65, and col. 5, lines 45-50. Or, Dahlberg discloses at col. 1 using GMR sensors in vehicles for navigation, where navigation systems have been desired in vehicles for over 200 years. It would have been obvious to employ the GMR sensor of Wang or Kano in the vehicles of McGlone or Dahlberg at the desired temperatures where McGlone discloses the desirability of GMR sensors in general for detection and Marx discloses same for navigation, and in particular, all references disclose having Co and Cu for detection in vehicles at certain desired operating temperatures, with a similar GMR sensor of Wang disclosed. The limitation of "wherein said magnetoresistive sensor has a magnitude of magnetic field of equal to or more than 100 Oersteds at a point where an integral of magnetoresistance ratio occupies 90% of a total magnetoresistance ratio in a magnetoresistance curve" is simply an inherent limitation since all sensors will saturate at some point above 100 Oersteds, even if they saturate below that, where the limitation is merely the saturation point as defined at page 12 of the specification. The prior art ones certainly will since they have the same materials and structure as applicant's invention.

3. Applicant's arguments filed 4/16/03 have been fully considered but they are not persuasive.

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Applicant argues that the recitation of the saturation field is not disclosed or suggested. This is not correct, as noted above, the recitation is an inherent function since the same structure and materials are disclosed. As to the limited magnetic field argument, there is no limitation in the claim for a limit. The limitation appears to deal with the saturation field of the device, not the input field. The argument is not clear. Moreover, even if saturation did occur at less than 100 Oersteds for the prior art devices, this is not a limit on the field applied, and further, the device would also saturate above 100 Oersteds, meeting the claim. As to the lack of teaching for using the Wang device in a vehicle, the Examiner disagrees. McGlone and Dahlberg disclose using magnetoresistors in vehicles for a variety of reasons, navigation among them, suggesting such use for similar types of magnetoresistors, such as those of Wang. Applicant argues that the examples of Kano are outside the invention, so that the claimed ranges are not obvious. This is not correct, where the ranges of Kano and the claim overlap, and where the ranges of Kano et al. are not unduly broad. Applicant does not argue that the device of Wang does not meet the structural limitations (except the vehicle mounting)..

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR

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1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl Easthom whose telephone number is (703)308-3306. The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad, can be reached on (703)308-7619. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


KARL D. EASTHOM
PRIMARY EXAMINER